

REMARKS/ARGUMENTS

The present invention contemplates a new and improved arc welder system that resolves many of difficulties in the prior art by incorporating an arc welder with a DC input into a movable carriage, such as a DC-powered lift, and using the movable carriage's DC power source to supply power to the welder.

Claims 44-47 and 50 remain in this application. Claims 45 and 50 have been amended. Support for the claim amendments can be found, for example, in paragraphs [0030] and [0034] of the specification.

Claims 44-45 Would Not Have Been Obvious Over GB 2 316 244 in View of DE 26 50 522 or Over Kikuchi (US 5,250,786) in View of DE 26 50 522

Claim 1 includes a high switching speed converter coupled to the battery for converting the DC battery voltage to a signal conditioned for welding. The high switching speed converter features a pulse width modulator that at least partially controls the signal conditioned for welding with respect to a welding electrode and a waveform generator that at least partially controls said pulse width modulator. In this respect, the high switching speed converter creates a series of current pulses that constitute a welding cycle representative of a current waveform, with the pulse width modulator controlling a current pulse width of a plurality of the current pulses.

These features are not specifically disclosed in the cited references. For example, GB 2 316 244 relates to an arc welder with a switch mode power supply with a control circuit 14 that repeatedly turns a transistor T on and off, so that an inductor L stores energy from a rechargeable battery 10 when the transistor T is on and then discharges the stored energy to welding electrodes 12, 16 when the transistor T is off (see, for example, FIG. 1 and Abstract). The circuit 14 may be responsive to a feedback signal from a current sensing resistor R and may operate the transistor T at a switching frequency of 10KHz. The duration of each ON period of the transistor T may be adjusted by a manually operated power setting control. However, there is no pulse width modulator or waveform generator shown in FIG. 1 or described in the specification.

As for Kikuchi, this reference discloses a battery driven welder 10 such that a

plurality of batteries 11 are connected in series, and a chopper control device 18 for controlling the output of the battery 11 is connected to the negative output side while a DC voltage can be output to the positive output side from output terminals 6-1 and 6-2 via changeover switch 30 (see col. 5, lines 18-26). The chopper control device 18 is used for adjusting the DC voltage with on-off control. However, there is no pulse width modulator or waveform generator shown in FIG. 2 or described in the specification.

Thus, it is evident that neither GB 2 316 244 nor Kikuchi discloses a high switching speed converter with all of the features as presented in claim 44. The other cited reference, DE 26 50 522, relates particularly to a portable welding trolley and fails to overcome these deficiencies.

Accordingly, claim 44 and claims 45-47 and 50, which depend therefrom are allowable over the cited references.

Claims 45 and 50 Are Separately Patentable

Claim 45, as amended, provides that the battery comprises a 48 volt battery pack and provides DC voltage to the high switching speed converter and to the wheeled carriage. The only reference that even suggests the use of a wheeled carriage is DE 26 50 522. However, in that reference there is no suggestion of using the battery to power both the welder and the wheeled carriage (see, for example, FIG. 2). As noted in the Abstract, "the pref. batteries are lead accumulators fitted with a connection for recharging and also driving an adjustable d.c. motor actuating the wire feeder. As such, claim 45 is distinguished over the cited references.

Claim 50, as amended, adds that the high switching speed converter comprises a DC down chopper and that a freewheeling diode is connected in parallel with said welding electrode and behind a parallel choke of a switching stage of said high speed switching converter. None of the cited references, including Baker, suggests such use of a freewheeling diode as described in claim 50. Accordingly, claim 50 is distinguished over the cited references.

CONCLUSION

For at least the reasons detailed above, it is respectfully submitted that all claims remaining in the application (Claims 44-47 and 50) are in condition for allowance.

Respectfully submitted,

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